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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,357	07/17/2003	Hideo Kobayashi	SHX 340	5352

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KOLISCH HARTWELL, P.C.
200 PACIFIC BUILDING
520 SW YAMHILL STREET
PORTLAND, OR 97204

EXAMINER	
GOFF II, JOHN L	
ART UNIT	**PAPER NUMBER**
1733	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/622,357	KOBAYASHI ET AL.	
	Examiner	Art Unit	
	John L. Goff	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6,7 and 11-39* is/are pending in the application.

4a) Of the above claim(s) *11-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6 and 7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on 11/24/06. The previous claim objections have been overcome. In view of applicants amendment the previous rejections over Maenza (U.S. Patent 5,968,305) in view of Young (U.S. Patent 6,561,640), Tsuboi et al. (JP 62-155965 and the abstract), Ohno et al. (U.S. Patent 6,613,170), and Anzai et al. (U.S. Patent 6,485,808) are withdrawn, and new rejections are set forth below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 7 requires a step wherein after the adhesive is semi-cured or cured the first and second disc substrates are transferred to a next process and the adhesive is cured. It is unclear how the adhesive is cured as opposed to semi-cured and then transferred to a next process and cured. The steps appear redundant. It is noted applicants argue at page 14 of the amendment filed 11/24/06, "Therefore, as used in the present application, and in the context of optical disc manufacture, "cured" is a state in which the adhesive does not protrude from the internal circumference of the center hole of the disc substrate". Even if "cured" is considered to be defined by the specification as a state in which the adhesive does not protrude from the internal

circumference of the center hole of the disc substrate then the claim still requires two steps wherein the adhesive is "cured", i.e. the adhesive is put into a state in which the adhesive does not protrude from the internal circumference of the center hole of the disc substrate, and the steps are redundant and the claim indefinite. It is suggested applicants delete from claim 7, line 3 "or cured" to overcome the rejection.

Claim Rejections - 35 USC § 103

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosogai (JP 10334521 and see also the abstract and machine translation) in view of Maenza (U.S. Patent 5,968,305), Young (U.S. Patent 6,561,640), and Anzai et al. (U.S. Patent 6,485,808).

Hosogai discloses a method of curing adhesive between first and second disc substrates (W1 and W2 of Figures 1 and 5), e.g. including optical recording layers, mounted on a table (1 of Figures 1 and 5) comprising rotating the first and second substrates mounted on the table at a high speed to spread the adhesive between the first and second disc substrates and rotating the first and second disc substrates mounted on the table slowly after spreading the adhesive while

radiating ultraviolet (uv) light from a uv lamp onto the spread adhesive to cure the adhesive (Figures 1 and 5 and Paragraphs 2-4, 9, and 13). Hosogai are silent as to providing the uv light from a plurality of light emitting semiconductor elements arranged at a high density. Maenza discloses a method of curing a uv curable material considered a uv curable adhesive between first and second disc substrates, e.g. including optical recording medium/layers, by rotating the first and second disc substrates while applying uv light from a scanning laser, i.e. a narrowband uv light source, through one of the disc substrates to cure the adhesive (Figures 3 and 4 and Column 3, lines 8-61). Maenza teaches a scanning laser is preferable to, i.e. used in place of, a wideband uv light source such as a uv lamp as was used previously because wideband light sources are difficult to spectrally control generating large amounts of energy, i.e. energy having wavelengths outside of those required to cure the uv light curable resin, and wideband uv light sources also generate large amounts of heat that can warp the first and second disc substrates and require longer curing times (Column 1, lines 48-56 and Column 2, lines 36-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the uv lamp in Hosogai with a scanning laser, a narrowband uv light source as shown by Maenza to cure the adhesive without generating energy having wavelengths outside of those required to cure the adhesive, warping the first and second disc substrates, and long curing times.

Hosogai as modified by Maenza while applying the light from a scanner laser which is a narrowband uv light source do not specifically teach applying the uv light from a plurality of light emitting semiconductor elements, e.g. light emitting diode (LED), arranged at a high density. However, it was known in the art that scanning lasers and light emitting diodes are functionally equivalent narrowband sources of uv light for curing uv light curable resins as

shown by Young. Young discloses an improved method for curing uv light curable resins considered to include uv light curable adhesives using scanning lasers or an array, i.e. plurality, of light emitting diodes both of which are considered narrowband uv light sources. Young teaches the method is improved over those using a wideband uv light source such as a uv lamp which emits broad ranges of frequencies and wavelengths not used to cure the uv light curable resin resulting in wasted energy (Column 2, lines 29-45 and Column 4, lines 20-42). Absent any unexpected results, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the uv light from a narrowband uv light source as taught by Hosogai as modified by Maenza using any of the functionally equivalent narrowband uv light sources known in the art including scanning laser, LED, etc. as shown by Young as only the expected results of applying uv light without wasting energy would be achieved.

Hosogai do not specifically teach the distance between the uv light source and the disc substrates. Anzai et al. are exemplary in the art of applying uv light from a uv light source to a disc substrate wherein the distance between the source and substrate depends upon the intensity of the light source, the time the uv light source is applied, etc. wherein 10 mm or less is specifically shown to not deform the disc substrates (Column 16, lines 30-67 and Column 17, lines 1-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the distance of the uv light source from the disc substrate in Hosogai as modified by Maenza and Young as a function of the intensity of the uv light source, the time the uv light source is applied, etc. as doing so would have required nothing more than ordinary skill and routine experimentation wherein routine experimentation and the specific distance of 10 mm or less are shown by Anzai et al.

Regarding the limitation that the plurality of light emitting semiconductor elements are arranged at a high density, it is noted the term "high density" is not further defined in the claims or specification such that the array of LEDs taught by Hosogai as modified by Maenza and Young is considered to be a high density array. Furthermore, the array of LEDs is present to provide uv curing light such that it would have been obvious to one of ordinary skill in the art at the time the invention was made to experimentally determine the density of the array of LEDs taught by Hosogai as modified by Maenza and Young as a function of the ability of the array to supply an adequate and even amount of uv curing light as doing so would have required nothing more than ordinary skill and routine experimentation.

Regarding claim 6, Hosogai teach including a reflective member (16 of Figure 1) such that uv light irradiated from the uv light source is made to contact the reflective member and radiate onto the adhesive from outside a circumference of the first and second disc substrates (Figure 1 and Paragraphs 12 and 15).

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosogai, Maenza, Young, and Anzai et al. as applied to claims 1 and 6 above, and further in view of Ohno et al. (U.S. Patent 6,613,170).

Hosogai, Maenza, Young, and Anzai et al. as applied above teach all of the limitations in claim 7 except for a specific teaching of curing in two steps by semi-curing the spread adhesive and transferring the first and second disc substrates with adhesive spread therebetween to a next process of fully curing the adhesive. Ohno et al. disclose curing a uv curable resin considered a uv curable adhesive between two disc substrates to an even thickness comprising providing two disc substrates with a uv light curable resin therebetween, rotating the disc substrates at a high

speed to evenly spread the resin over the disc substrates, detecting the thickness of the spread resin to determine when the spread resin has reached a preset thickness, applying uv light to the inner and/or outer circumference of the disc substrates to semi-cure the resin at the inner and outer edges to maintain the thickness during further processing, and transferring the disc substrates with resin therebetween to a next process of applying uv light to completely cure the resin layer (Figures 14 and 15 and Column 17, lines 15-67 and Column 18, lines 1-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include following the spreading of the resin between the disc substrates as taught by Hosogai as modified by Maenza, Young and Anzai et al. a step of detecting the thickness of the resin and then semi-curing the resin before transferring to a process of fully curing the resin as shown by Ohno et al. to form the adhesive between the disc substrates with an even thickness.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 6, and 7 have been considered but are moot in view of the new ground(s) of rejection.

Applicants arguments to the 35 USC 112 rejection are addressed above in paragraph 4.

> Applicants argue, "In particular, Applicants disagree that "Maenza teaches a narrowband uv light source is preferable to a wideband uv light source ..." as suggest by the Examiner (at page 3-4 of the Office Action). The Maenza references only suggests that "... Wideband light sources are difficult to spectrally control and generate large amounts of infrared ("IR") energy ...". While this could be considered a suggestion that wideband uv light is not preferred, it does not rise to the level required for obviousness under 35 U.S.C. § 103, i.e. suggesting the desirability of the claimed invention. Maenza fails to suggest that a narrowband uv light source is preferable, and in fact, Maenza fails to use the description "narrow" at all.".

Maenza specifically disclose using a scanning laser which is a narrowband uv light source to cure a uv curable material considered a uv curable adhesive between two disc substrates in place of wideband uv light sources such as a uv lamp as was used previously because wideband light sources are difficult to spectrally control generating large amounts of energy, i.e. energy having wavelengths outside of those required to cure the uv light curable resin, and wideband uv light sources also generate large amounts of heat that can warp the first and second disc substrates and require longer curing times. Thus, Maenza is considered to teach a scanning laser which is a narrowband uv light source is preferable to the wideband uv light sources as used in the prior art when curing a uv curable adhesive between two disc substrates.

> Applicants further argue, "Additionally, the Young reference is directed to systems and methods of printing. Applicants suggest that one of ordinary skill in the art of optical disc manufacture would not properly be lead to the literature associated with ink-jet printing to find the solution to a problem present in optical disc manufacture. Applicants suggest that Young is neither in the field of the Applicants' endeavor, nor is it reasonably pertinent to optical disc manufacture, and so corresponds to nonanalogous art." and "Even if Maenza and Young were to be combined, the Young reference is directed to methods of drying applied inks."

Young is directed to an improved method of curing uv light curable resins considered to include uv light curable adhesives using a scanning laser or an array, i.e. plurality, of light emitting diodes both of which are narrowband uv light sources. Young teaches the improved method results from using these uv light sources because a wideband uv light source such as a uv lamp emits broad ranges of frequencies and wavelengths not used to cure the uv light curable resin resulting in wasted energy. Young is not limited to curing only inks as inks are merely exemplary (See specifically Column 2, lines 29-45 and Column 3, lines 46-53). Young is directed to curing uv light curable resins which is considered to include uv light curable

adhesives. Young is cited simply to show the know functional equivalence of a scanning laser and a plurality of light emitting diodes in curing uv light curable resins.

> Applicants further argue, "Applicants additionally suggest that it is improper to combine the Ohno et al. and Maenza references as suggested by the Examiner. Ohno et al. disclose a process of curing resin between two substrates by first irradiating an inner annular region of the substrates, followed by a subsequent radiation of the disc substrate overall. However, the teachings of Ohno et al. contradict the disclosure of Maenza, as Maenza stresses line-by-line scanning of the optical disc substrates, in order to avoid warping, unevenness or irregularity upon curing the adhesive. Applicants respectfully suggest that there is insufficient teaching or motivation to combine the Ohno et al. and Maenza references, and so their combination in order to establish obviousness under 35 U.S.C. § 103 is improper.".

None of the teachings in Maenza teach away from or preclude the two curing steps taught by Ohno et al. wherein the motivation to combine Hosogai as modified by Maenza, Young and Anzai et al. with Ohno et al. is found in forming the spread adhesive layer with an even thickness.

> Applicants further argue, "Furthermore, Anzai et al. is not concerned with curing adhesive. Rather, Anzai et al. describes uv radiation onto a surface of a polycarbonate substrate in order to reform or refine the surface of the substrate, and to flatten the surface itself. This is an entirely different application of uv irradiation, with a distinct object from that of the present application. One of ordinary skill would not look to Anzai et al. for guidance in curing resin.".

Anzai et al. are cited as exemplary in the art of applying uv light from a uv light source to a disc substrate wherein the distance between the source and substrate depends upon the intensity of the light source, the time the uv light source is applied, etc. wherein 10 mm or less is specifically shown to not deform the disc substrates. One of ordinary skill in the art would look to Anzai et al. for guidance in applying uv light to a disc substrate to avoid deforming the disc substrate.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571) 272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John L. Goff